SIR AUREL STEIN'S EXPEDITION IN CENTRAL ASIA.*

(*From 'The Geographical Journal' for October*, 1915.)

* Communication from Sir Aurel Stein, K.C.I.E., PH.D., D.SC., dated "Camp Bostan-Arche, Ulughart Valley, July 10, 1915." See *Geographical Journal*, vol. **45**, p 405.

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By the first week of November, 1914, the several parties of my expedition were safely re-united at Kara-khoja, the central oasis of the Turfan depression. A two months' journey had brought us by widely different routes back from Kanchou to this north-eastern corner of Chinese Turkestan. A variety of reasons had induced me to select Turfan as my base for the geographical and archæological labours planned during the ensuing winter. From what my brief visit to Turfan in 1907 had shown me, I could hope that the ruins of Buddhist times preserved there in abundance had not yet been completely exhausted, in spite of their easy accessibility within or quite close to oases near a high-road and of the attention they had received from successive archæological expeditions, Russian, German, and Japanese.

Turfan further offered itself as the most convenient starting-place for the series of tours I wished to organize for the exploration of unknown or as yet inadequately surveyed portions of the Kuruk-tagh and Lop deserts southward. And, finally, geographical and antiquarian interests combined to make me eager for an accurate large-scale survey of the Turfan basin, for it is just there that we find exhibited, within close topographical compass and in a concentrated form, as it were, all those characteristic physical features which make its great neighbour and counterpart, the Tarim basin, so interesting both to the geographer and the historical student.

This detailed survey of the Turfan depression was started on the scale of 1 inch to the mile and with carefully observed contours by Surveyor Muhammad Yakub as soon as he had joined me after a difficult desert crossing from the terminal basin of Hami. A few days later the rapidly increasing cold, felt even here below sea-level, allowed me to send off Rai Bahadur Lal Singh to the Kuruk-tagh, or "Dry Mountains," where difficulties arising from the want of drinkable water could be met only by the use of ice from salt-springs—or of snow if such happened to fall.

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By then the archæological labours had already commenced which were to keep me and my remaining two Indian assistants busy for the next three and a half months.

Their first scene was the ruined town known as Idikut-shahri. It immediately adjoins the large village of Kara-khoja and has long ago been identified as the site of Kao-chang, the Turfan capital during T'ang domination (7th to 8th century A.D.) and the subsequent Uigur period. Within an area nearly a mile square and enclosed by massive walls of stamped clay there rise here the ruins of very numerous structures built of sun-dried brick or clay, almost all Buddhist shrines and several of imposing dimensions. For generations past the cultivators of the adjoining villages have quarried the *débris*-filled ruins to obtain manuring earth for their fields. The excavations repeatedly made here by Profs. Grünwedel and Von Lecoq between 1902–1907 had induced the villagers to extend their destructive operations and to carry them deeper in the hope of securing manuscript remains and antiques as valuable by-products for sale to Europeans and their agents. But there still remained some ruins where the deeper *débris* strata had escaped exploitation. Their systematic clearing brought to light a variety of interesting remains in the shape of fresco pieces, fragments of paintings on paper and cloth, stucco relievos and the like illustrating Buddhist art at Turfan. We also recovered manuscript remains in the Uigur, Tibetan, Chinese, and Manichæan scripts. Among individual finds of interest may be mentioned a hoard of well-preserved metal objects, including decorated bronze mirrors, ornaments, vessels, etc. It derived special interest from the large number of coins found with it which enabled me to fix with approximate accuracy the date of its deposit in Sung times. Our work included an exact plan of the whole site.

After visiting smaller ruined sites in the eastern portion of the Turfan basin, I started towards the close of November excavations in the picturesque gorge of Toyuk. There the precipitous cliffs, rising above the small stream which waters a prosperous little oasis famous for its grapes, are honeycombed by numerous rock-cut caves once used for Buddhist worship. Ruins of small cellas occupy narrow terraces where the slopes are less steep. Important finds of manuscripts had been made by the second German expedition at the most conspicuous of these shrines, as the great quantity of fragments of Chinese Buddhist texts left lying among the *débris* still attested. This had stimulated the monkey-like emulation of native searchers for antiques, with the result of terrible havoc being wrought among the ruins previously left more or less untouched. We succeeded, however, in tracing remains of small shrines lower down which had escaped such destruction owing to the heavy covering masses of *débris*. Fortunately here as elsewhere about Turfan the employment of large numbers of diggers was easy, conditions being so different from those to which my previous work at sites far away from habitations and water had

accustomed me. In the end our work at Toyuk was rewarded by the recovery of a considerable quantity of fine fresco paintings and stucco relievos. There were finds, too, of fragmentary Chinese and Uigur texts.

By the middle of December I was able to leave Toyuk for the important site below Murtuk village. There one branch of the stream watering the Kara-khoja oasis breaks in a narrow wild gorge through the barren hill range overlooking the Turfan depression from the north. A conglomerate terrace on the west bank bears an extensive series of ruined Buddhist temples partly cut into the rock face. By the richness and artistic merit of their fresco decoration they surpassed any remains in the Turfan region. In 1906 these big wall paintings representing scenes of Buddhist legend and worship in great variety of subject and style had been carefully studied by Prof. Grünwedel, a leading authority on Buddhist iconography, and a considerable selection of fresco panels was then removed to the Ethnographical Museum at Berlin. Exposed for long centuries to casual injury at the hands of iconoclast Muhammadan visitors, the frescoes had suffered even more during recent years from natives, who in vandal fashion would cut out small pieces for sale to Europeans. The near risk of complete destruction was only too obvious, and I accordingly decided to save as much as possible of these fine-art remains by careful systematic removal. Fortunately I had trained help available for this long and difficult task in the person of my "handy man," Naik Shams Din, of the 1st Sappers and Miners, and through his devoted energy and technical skill the work was in the course of six weeks successfully accomplished according to carefully drawn plans.

While it was still proceeding I could apply myself to the excavation of smaller Buddhist ruins near Murtuk, and then to a task which proved as fruitful as it was in some ways unpleasant. On the gravel-covered waste between the debouchure of the gorge descending from Murtuk and the village of Astana which adjoins Kara-khoja from the west, there extends a vast ancient burial-ground marked by small stone mounds which low lines of embanked gravel enclose into scattered groups. Below these mounds there lie tomb chambers cut into the underlying hard sandstone, with a narrow rock-cut passage leading deep down to the entrance. Most of these tombs appear to have been searched for valuables during the last Muhammadan rebellion and perhaps also earlier. But drift-sand had completely closed up their approaches, and the attention of local antique-hunters had turned to them only during the last few years. These recent operations had not proceeded far, and anyhow assured us of the absence of any local prejudices.

The systematic search we effected of very numerous tombs has conclusively shown that this cemetery belongs to the early T'ang period when Kao-chang was an important administrative centre and garrison of the Chinese holding Eastern Turkestan. Chinese inscriptions on bricks have furnished exact dates, names of persons, etc. This is not the place

to give details as to interesting burial customs revealed by these tombs or the remarkable state of preservation in which most of their contents and tenants were found. This state is fully accounted for by the Turfan climate, which vies with that of Egypt in dryness. It must suffice to record that the archæological spoil has been abundant, and strikingly illustrates the position which Turfan occupied at that period as a place of trade exchange between Western Asia and China. Finds of Byzantine and Sassanian coins used much in the fashion of the classical obolus were frequent. Equally curious is the abundance of brocades and other decorated silk fabrics showing designs usually associated with Persian work of Sassanian times. The stucco figurines, miniature household implements, articles of food, clothing, etc., deposited with the dead acquaint us with many aspects of the daily life led in Turfan at that period. There were paintings on silk, too, and manuscript records in plenty.

However interesting and to me novel this work was, I felt heartily glad when the time came to exchange this search of the dead's habitations for exploratory tasks in the desert. Towards the close of January Lal Singh had rejoined me from the "Dry Mountains," having accomplished important survey work in the face of great physical difficulties. In accordance with my instructions, he had started triangulation after reaching Singer, the only permanent habitation in that vast expanse of barren plateaus and hills, and carried it south-east to the vicinity of the Lou-lan sites in the wind-eroded Lop desert. There he had waited patiently for a week amidst icy gales, with temperatures falling well below zero Fahrenheit, until the atmosphere had cleared and allowed him to connect his triangles right across the Lop desert with high snowy peaks of the Kun-lun some 150 miles south which had been fixed by his triangulation of 1913. It was my hope to get this link with the Indian triangulation system extended later on to the Tian-shan range in the north.

Accompanied by Abdur Rahim, the experienced hunter of wild camels from Singer, who had proved so useful to us a year before, Lal Singh had then pushed into the unexplored and absolutely sterile region to the north-east of Altmish-bulak until the total exhaustion of his fuel supply obliged him to turn westwards again after having reached close to 92° long. On his return journey he picked up an old desert track once used by hunters of wild camels from Hami before certain salt springs had dried up, and followed it through to the salt marsh which forms the deepest portion of the Turfan basin. Numerous observations made there with the mercurial barometer will, I hope, permit its depression below sea-level to be determined more accurately than had been possible so far.

By the first week of February Lal Singh was eager to take the field again in the Kuruk-tagh, and by dint of great efforts we had completed the packing of our plentiful "archæological proceeds." On February 6 I started my big convoy of antiques making up fifty heavy camel-loads for

its two-months' journey to Kashgar, and on the same day Afrazgul Khan, my zealous and ever-active assistant from the Khyber Rifles, was sent off to the Lop desert for a supplementary survey of the Lou-lan region and the ancient dry lake-bed east and south. I myself was detained ten days longer by arrangements for the completion of the large-scale map of the Turfan depression and by the collection of supplementary data bearing on its extant irrigation resources. The fact that now the greater portion of the cultivated area is dependent on *Karezes* or springs tapped by underground canals, a system introduced into Turfan only in the eighteenth century, clearly proves the diminution which has taken place since Buddhist times in the water-supply above ground. A detailed survey was also made of the curious site of Yar-khoto, where a maze of ruined dwellings carved out of the loess soil of an isolated and naturally strong plateau represents the remains of the Turfan capital of Han times.

On February 16 I set out myself for the Kuruk-tagh, and after securing from Singer Abdur Rahim's youngest brother as guide, visited several localities in the mountains westwards where traces of earlier occupation were reported. In the course of this tour I was able to map a good deal of ground which had remained still unsurveyed. By its succession of remarkably rugged ranges and deeply eroded valleys it presented a striking contrast to the plateau-like character borne by most of the Kuruk-tagh eastwards. The presence of scanty grazing in the higher valleys and even of some tree-growth helps to explain the reference which the Han Annals make to the westernmost Kuruk-tagh as a sporadically inhabited region.

By the first week of March I had made my way south-eastwards to the salt spring of Yardang-bulak at the extreme foot of the Kuruk-tagh, where it overlooks the dried up ancient river-bed first traced by Dr. Hedin which once carried the water of the Konche-darya to the Lou-lan sites. The ice-supply taken from there allowed me to make a tour in the waterless desert south. There I mapped the ancient river-bed, still clearly distinguishable between the belt of dead trees lining its banks, over the last portion of its course left unsurveyed last year. I also explored two ancient cemeteries of small size on clay terraces rising above the wind-eroded riverine plain. The finds closely agreed with those made in graves which I had examined the year before in the extreme north-east of Lou-lan. The bodies undoubtedly belonged to the autochthone population of herdsmen and hunters inhabiting this tract until its final drying-up in the fourth century A.D. The objects found with them strikingly demonstrated the difference in civilization and modes of daily life between the semi-nomadic Lou-lan people and the Chinese frequenting the ancient high-road which led along the dried-up river westwards.

On my return to Yardang-bulak I was greatly relieved by Afrazgul safely rejoining me. He was a week overdue, and, considering the forbidding nature of the ground my plucky assistant and his three Turki followers

had to traverse, there had been cause for anxiety. After gaining Altmish-bulak by the most direct route, and taking his ice-supply there, he had explored certain ancient remains in the extreme north-east of the once watered Lou-lan area which on our hazardous march of last year we had been obliged to leave unexamined. He then retraced the ancient Chinese route to the point where it crossed the dry lake-bed of hard salt, and thence surveyed the shore-line of the latter until he reached the edge of the area where the spring floods of the Tarim finally lose themselves in lagoons and marshes. From there he turned north, and, after tracing more ruins along the ancient dry river branch discovered last year, gained the foot of the Kuruk-tagh across an area of formidable high dunes. Apart from interesting archæological finds Afrazgul brought back from this exceptionally difficult exploration a detailed plane-table survey which, in conjunction with last year's mapping, will help to show the so-called Lop-nor problem in a new light.

Then we moved west to Ying-pên, where the Turfan-Lop track crosses the ancient bed of the Konche-darya. A short halt there enabled me to explore the remains of an ancient fortified station and neighbouring small temple site, first noticed by Colonel Kozloff and Dr. Hedin. Finds of fragmentary Kharoshthi records on wood and of coins proved that the ruins dated back to the early centuries of our era when the ancient Chinese high-road passed here. The station guarded an important point on the route, and must have held a Chinese garrison, as proved by the remains which came to light from some well-preserved tombs near by.

Starting from Ying-pên for Korla, I first traced in the desert westwards the ancient bed by which the waters of the Konche-darya had once passed into the "Dry River" of Lou-lan. I then explored the remains of an ancient line of watch-stations extending along the foot of the Kuruk-tagh, on a route which Dr. Hedin had first followed in 1896. The constructive features observed in these watch towers, some of them remarkably massive and well-preserved, showed the closest resemblance to those with which I had become so familiar in the course of my explorations of the ancient Chinese *Limes* of Kansu. It appears to me, hence, highly probable that these towers were built soon after the date (*circ.* 100 B.C.) when the Emperor Wu-ti established his wall and line of posts along the route leading from Tun-huang towards Lou-lan. But the line marked by these towers must have continued to serve as a high-road down to T'ang times, as was proved by the finds we made in clearing the refuse heaps near them. Distinct evidence showed that the towers had been intended chiefly for the communication of fire-signals, as mentioned in the early Chinese records from the Tun-huang *Limes*. This purpose is easily understood, as it was mainly from the direction of Kara-shahr and Korla that the Hun raids must have proceeded which we know to have threatened more than once the Chinese hold upon Lou-lan and the security of the route leading through it.

I reached the large oasis of Korla on the last day of March, and there I was soon joined by my several surveying parties. Lal Singh had had to contend with exceptional difficulties, both from the very broken nature of the ground and adverse atmospheric conditions—all through March we had suffered from a succession of dust-storms. Yet he had succeeded in carrying his triangulation from Singer through the western Kuruk-tagh to the snow-covered peaks north of Korla. Thus the Tian-shan range has been linked with the system of the Trigonometrical Survey of India.

After a short and much-needed rest at Korla, we started in three separate parties for the long journey to Kashgar. Lal Singh was to keep close to the Tian-shan in order to survey as much of the main range as the early season and the available time would permit. Muhammad Yakub was sent with the camels across the Konche and Inchike rivers to the Tarim, the course of which he was to survey to the vicinity of Yarkand. I myself was compelled by antiquarian reasons to keep to the line of oases which extends along the south foot of the Tian-shan, and through which the great caravan route passes just as it had in ancient times. This journey, over 900 miles in length, offered plentiful opportunities for interesting observations on the historical geography and the present physical conditions of this northern edge of the great Turkestan desert basin. This is not the place to record them. But I may mention at least that remains of the ancient Han route could be traced as far as Kucha.

Making this historically important oasis my base, I spent some busy weeks in surveying, with Afrazgul's help, both its actually cultivated area and that which numerous ancient sites scattered in the scrubby desert around prove to have once belonged to it. This survey, attended also by archæological finds of interest, has convinced me that the area under cultivation in Buddhist times was greatly in excess of the extant irrigation resources, of which we secured careful measurements. That the discharge of the rivers irrigating Kucha has diminished considerably since T'ang times seems to me quite clear. But to what extent this "desiccation" was the direct cause for the abandonment of once irrigated areas and at what particular periods it proceeded are questions to which the antiquarian evidence at present available does not supply a definite answer.

At Aksu I was met by Lal Singh, who had managed at three points to carry his plane-table survey up to the snow-covered watershed of the Tian-shan. Sending him westwards by a new route between the unsurveyed outer ranges of Kelpin, I moved by rapid marches to Kashgar, where I arrived on May 31. Colonel Sir Percy Sykes, who had temporarily replaced there my old friend Sir George Macartney as British Consul-General, offered me the kindest hospitality and help. The safe repacking of my collection of antiques, some 180 cases, for its long

journey across the Karakoram to Kashmir, and a host of other practical tasks, kept me hard at work all through June. In the meantime I had the great satisfaction of receiving through the kind offices of H.E. Sir George Buchanan, H.B.M.'s Ambassador at Petrograd, the final permission of the Russian Government for my long-planned journey across the Pamirs and through the mountain tracts north of the Oxus. In a few days I propose to set out on this journey, which is to serve mainly researches on the historical geography and archæology of those regions. In the autumn I hope to follow them up by similar work in easternmost Persia.

[The following is an extract from a letter dated "Camp Kara-Chem, Pamirs, August 8, 1915"]:—

I was able to start for the Pamirs by the first week of July. On my way I stopped for "daffar" work at Bostan-arche, a delightful spot below the Ulugh-art, with fir forest and quite alpine surroundings, which would make a splendid "hill station." I made my way north to the Alai, and am now proceeding from there along the grand snowy range which forms the western rim of the Pamirs towards the Great Pamir source of the Oxus. I propose to follow the latter down through Wakhan to Khorok, and thence to visit Roshan, Darwaz, Karategin before going to Bokhara and the railway. About the end of October I may hope to reach Meshed. The winter I propose to spend in Seistan, and by March I hope to return to India, if all goes well. I have asked for furlough to take me home in the spring and enable me to complete "Serindia," the final report on my second journey. I have met with nothing but kind help since I crossed the Russian border, and feel elated by the chance of seeing so much of new and fascinating ground. Some of it is decidedly rough to travel over, but my leg has so far stood the climbs and long marches quite well.

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